

REMARKS

Claims 29-62 are pending in the present application. Claims 47-56 and 59-62 were previously withdrawn by restriction. Claim 29 has been amended. Amendments to claim 29 are fully supported by the as-filed specification at least at page 16, lines 1-9. Accordingly, Applicants submit that no new matter is being added to the application. Reexamination of the application and reconsideration of the rejections and objections are respectfully requested in view of the above amendments and the following remarks, which follow the order set forth in the Office Action.

Rejections under 35 U.S.C. § 103

Serpico and Sayari

Claims 29-31, 33-43, 45-46 and 58 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0118887 to Serpico et al. (“Serpico”) in view of the document to Sayari et al., Chemistry of Materials 2001, 13, pp. 3151-3168 (“Sayari”), and as evidenced by U.S. Patent Application Publication No. 2002/0028372 to Ohlsen et al. (“Ohlsen”). Applicants respectfully traverse.

Amended claim 29 recites a conductive organic-inorganic hybrid material comprising a mineral phase in which walls define pores forming a structured mesoporous network with open porosity; said material further comprising an organic oligomer or polymer integrated in said walls and bonded covalently to the mineral phase, and optionally another phase inside the pores, composed of at least one surface active agent; wherein at least one of the mineral phase and the organic oligomer or polymer have conductive and/or hydrophilic functions and wherein the organic oligomer or polymer and the at least one surface active agent are different from one another in terms of their structure and their effect.

Serpico discloses a composite membrane comprising a polymer and a reinforcing substrate bonded thereto. *See, Abstract.* Serpico also discloses using organic-inorganic hybrid composites for potentially increasing the mechanical integrity of the membrane. *See, ¶ [0045].* Serpico states that chemical networks of the inorganic materials can be prepared within the structure of the polymer. *Id.* Further, a co-continuous network can be formed in which the base polymer is incorporated into the inorganic phase. *See, Id.* The membranes disclosed in Serpico are on the microscopic scale. For example, in Example 2, the membrane thickness for all cases was around 1 millimeter, and in ¶ [0044], micro-reinforced composites having a thickness of less than a millimeter are described.

In contrast, the structures described in Sayari are on the nano-scale. Hence, the structures described in Sayari are significantly (i.e., 1000 times) smaller than the structures described in Serpico. Sayari discloses that nanoscale polymer fibers may be fabricated within the confined void volumes (i.e., pores) of silica mesophase structures. *See*, p. 3165, right column, 2nd paragraph. The nanoscale polymer fibers grown within the constrained space of the mesoporous silica may exhibit unusual properties. *See*, p. 3165, left column, 1st paragraph. Thus, the nanofabrication of polymer fibers within the silica channels has attracted much attention. *Id.*

Serpico discloses membranes on the microscopic scale, and Sayari discloses structures on the nano-scale or the molecular scale. Thus, the structures disclosed in Serpico are 1000 times larger than those disclosed in Sayari. It is also well recognized, and supported by the disclosure of Sayari, that often materials at the nanoscale or molecular scale behave differently from or exhibit unusual properties in comparison to the same materials at a larger scale (e.g., microscopic scale). As such, given the difference in scale between the structures of Serpico and the structures of Sayari, Applicants submit that one of ordinary skill in the art would have no reason to combine the teachings of the two references.

Further, Applicants submit that one of ordinary skill would believe that it would be necessary to modify the teaching of Sayari in order to combine the teachings of Serpico and Sayari. As such, one of ordinary skill in the art would have no reason to combine the teachings of the two references. More specifically, as previously described, Serpico discloses a co-continuous network in which the base polymer is incorporated into the inorganic phase. In contrast, Sayari discloses a silica mesophase structure having polymer fibers encapsulated in the pores thereof. Thus, if one of ordinary skill in the art were to combine the teachings of Serpico and Sayari, this skilled artisan would believe that it is necessary to remove the polymer fibers from the pores of the Sayari structure because polymer is already incorporated into the inorganic phase in the structure of Serpico. Removing the polymer from the pores of Sayari would be contrary to the disclosure of Sayari and thus would modify the teaching thereof. Accordingly, one of ordinary skill in the art would have no reason to combine the teachings of Serpico and Sayari because the teaching of Sayari would be modified in order to do so.

Additionally and alternatively, Applicants submit that one of ordinary skill in the art would also believe that it would be necessary to modify the teaching of Serpico in order to combine the teachings of Serpico and Sayari. As such, one of ordinary skill in the art would

have no reason to combine the teachings of the two references. More specifically, as described above, Serpico discloses a co-continuous network in which the base polymer is incorporated into the inorganic phase. In contrast, Sayari discloses a silica mesophase structure having polymer fibers encapsulated in the pores thereof. Thus, if one of ordinary skill in the art were to combine the teachings of Serpico and Sayari, this skilled artisan would believe that it is necessary to remove the incorporated polymer from the inorganic phase because Sayari only discloses the presence of polymer in the pores of the mesophase structure. Removing the incorporated polymer from the inorganic phase of Serpico would be contrary to the disclosed objective of Serpico to increase the mechanical integrity of the polymer membrane and thus would modify the teaching thereof. Accordingly, one of ordinary skill in the art would have no reason to combine the teachings of Serpico and Sayari because the teaching of Serpico would be modified in order to do so.

Based on the foregoing, Applicants submit that claim 29 is not obvious in view of the combination of Serpico and Sayari. Accordingly, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

Serpico and Sayari in combination with Secondary References

Claims 32 and 44 were rejected as being unpatentable over Serpico in view Sayari and further in view of Brinker et al., U.S. Patent No. 6,270,846 (“Brinker”). Additionally, claim 57 was rejected as being unpatentable over Serpico in view of Sayari and further in view of U.S. Patent No. 6,465,052 to Wu (“Wu”). Applicants respectfully traverse. Applicants submit that neither Brinker nor Wu provide any disclosure that overcomes the defects of the combination of Serpico and Sayari because neither provides a reason for combining the teachings of Serpico and Sayari. Accordingly, Applicants submit that claims 32, 44, and 57 are not obvious in view of the combination of the cited references. Thus, Applicants respectfully request reconsideration and withdrawal of the instant rejections.

Provisional Double Patenting

Claims 29-46 and 57-58 are *provisionally* rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 31-51,61-62 and 66-67 of co-pending Application No. 10/542,768. Applicants thank the Examiner for bringing this potential issue to the attention of Applicants. While Applicants do not believe that there is currently a double patenting issue between this application and Application No. 10/542,768,

Applicants note that claim amendments have been made in this application, and it is likely that claim amendments will be made in Application No. 10/542,768 during prosecution thereof. Accordingly, there is a possibility that no double patenting issue will exist between the two applications at the time when claims in one of the applications are allowed. Thus, Applicants will take no action at this time. However, if a double patenting rejection is made in the future, Applicants will respond accordingly.

For the foregoing reasons, claims 29-46, 57 and 58 are considered to be allowable. A Notice to this effect is respectfully requested. If any questions remain, the Examiner is invited to contact the undersigned at the number given below.

The Director is hereby authorized to charge any appropriate fees that may be required by this paper, and to credit any overpayment, to Deposit Account No. 23-1925.

Respectfully submitted,

BRINKS HOFER GILSON & LIONE

Date: March 11, 2010

By: 
Allyn B. Rhodes
Registration No. 56,745

2801 Slater Road, Suite 120
Morrisville, NC 27560-8477
Phone: 919.481.1111

Doc#751955